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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,371	08/27/2003	Peter R. Wood	10030.000110 (GCI-001)	4730
31894	7590	02/15/2005	EXAMINER	
OKAMOTO & BENEDICTO, LLP P.O. BOX 641330 SAN JOSE, CA 95164			WALLING, MEAGAN S	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/649,371

Applicant(s)

WOOD ET AL.

Examiner

Meagan S Walling

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,6,11,12,14-16,18,24-26,28 and 29 is/are rejected.
- 7) ☒ Claim(s) 3,4,7-10,13,17,19-23 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/13/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 2, 6, 11, 12, 14-16, 18, 24-26, 28, and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Tustaniwskyj et al. (US 5, 844,208).

Regarding claim 1, Tustaniwskyj et al. teaches a first resistor on a circuit board; a second resistor on a circuit board (column 4, lines 62-66); and a heat conductive material (13c) attached to both the first and second resistors (13) and to a surface of a package containing the integrated circuit (11).

Regarding claim 2, Tustaniwskyj et al. teaches that the integrated circuit is coupled to the circuit board by way of a bottom surface of the packaged integrated circuit (11a), and wherein the heat conductive material is attached to a top surface (13a) of the packaged integrated circuit (see Fig. 1).

Regarding claim 6, Tustaniwskyj et al. teaches that the heat conductive material comprises a metal ribbon (column 4, line 62).

Regarding claim 11, Tustaniwskyj et al. teaches a temperature controller configured to control electrical current through the two resistors (column 3, lines 5-11).

Regarding claim 12, Tustaniwskyj et al. teaches a temperature sensor configured to measure a temperature of the integrated circuit and to provide the temperature

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measurement to the temperature controller (column 3, lines 4-5), wherein the temperature controller uses the temperature measurement as feedback data in controlling the electrical current through the two resistors (column 3, lines 5-11).

Regarding claim 14, Tustaniwskyj et al. teaches controlling an electrical current flowing through one or more resistive elements so as to control generation of heat therefrom (column 4, lines 62-66); and conducting the generated heat by way of a heat conductive element (13c) from the resistive elements to a package (11) containing the integrated circuit (column 2, line 66 – column 3, line 1).

Regarding claim 15, Tustaniwskyj et al. teaches sensing a temperature of the integrated circuit by way of a temperature sensor (column 3, lines 4-5); providing the temperature as feedback control data to a controller (column 3, lines 5-11); and utilization of the feedback control data by the controller in controlling the electrical current flowing through the resistive elements (column 3, lines 5-11).

Regarding claim 16, Tustaniwskyj et al. teaches that the method is applied in a temperature-uncontrolled environment (column 11, lines 34-38).

Regarding claim 18, Tustaniwskyj et al. teaches a heater element (13) thermally coupled to a top surface of a body containing an integrated circuit (column 2, line 66 – column 3, line 1); a temperature sensor thermally coupled to the IC body (column 3, lines 4-5); and a controller configured to receive temperature data from the temperature sensor and to use the temperature data to control heat generation by the heater element (column 3, lines 5-11).

Regarding claim 24, Tustaniwskyj et al. teaches that the integrated circuit is encapsulated with a sealed environment (column 4, lines 20-22).

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Regarding claim 25, Tustaniwskyj et al. teaches heating a first surface of a package containing the integrated circuit using a heating element (13) thermally coupled to the first surface (column 2, line 66 – column 3, line 1); and dissipating heat from the second surface using a heat sink (14) thermally coupled to the second surface (column 3, lines 1-4).

Regarding claim 28, Tustaniwskyj et al. teaches measuring a temperature of the integrated circuit (column 3, lines 4-5); and using the temperature measurement in controlling the heating element (column 3, lines 5-11).

Regarding claim 29, Tustaniwskyj et al. teaches using programmable memory to hold at least one boundary temperature to be used in the control of the heating element (column 16, lines 4-9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tustaniwskyj et al. in view of Takayanagi et al. (US 5,638,097).

Tustaniwskyj et al. teaches all of the limitations of claim 5 except the limitation that the first resistor is configured on one side of the integrated circuit on the circuit

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board, and wherein the second resistor is configured on an opposite side of the integrated circuit on the circuit board.

Takayanagi et al. teaches heaters (Fig. 3A, Ref. 8) on either side of a semiconductor (Fig. 3A, Ref. 3).

It would have been obvious to one skilled in the art at the time of the invention to combine the teachings of Tustaniwskyj et al. and Takayanagi et al. to put the heaters on either side of the IC. The motivation for making this combination would be to heat the IC evenly and quickly.

Allowable Subject Matter

3. Claims 3-4, 7-10, 13, 17, 19-23, and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the indication of allowability of claim 3 is the inclusion of the limitation that the heat conductive material is configured between the integrated circuit and the circuit board. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 4 is the inclusion of the limitation that the heat conductive material is attached to at least one side surface of the packaged integrated circuit. It is this limitation in the claimed combination that has

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not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 7 is the inclusion of the limitation that the metal ribbon is wrapped around each of the first and second resistors. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 13 is the inclusion of the limitation of a voltage source coupled to one end of the resistors; and at least one transistor coupled to another end of the resistors, wherein the electrical current is controlled controlling an electrical current through the transistors. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 17 is the inclusion of the limitation that the method is applied to provide pre-heating of the integrated circuit, prior to application of power to the integrated circuit. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 19 is the inclusion of the limitation that a heat spreader is configured between the top surface of the IC body and the heater element. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

The primary reason for the indication of allowability of claim 27 is the inclusion of the limitation that the heating element is at least partially thermally separated from the

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heat sink by an insulating substrate such that heat generated from the heating element is primarily directed toward the IC and not toward the heat sink. It is this limitation in the claimed combination that has not been found, taught, or suggested by the prior art of record that makes these claims allowable.

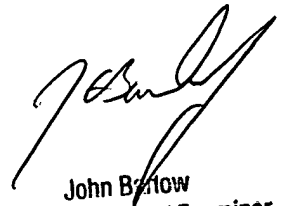
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan S Walling whose telephone number is (571) 272-2283. The examiner can normally be reached on Monday through Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

msw



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